Economy and Environment Program
for Southeast Asia
22 Cross Street #02-55
South Bridge Court
Singapore 048421

Phone: (65) 6438 7877
Fax: (65) 6438 4844
E-mail: hfrancisco@idrc.org.sg
Web site: www.eepsea.org

The Economy and Environment Program for Southeast Asia (EEPSEA) was established in May 1993 to support training and research in environmental and resource economics across its 9 member countries: Cambodia, China, Indonesia, Laos, Malaysia, Papua New Guinea, the Philippines, Thailand, and Viet Nam. Its goal is to strengthen local capacity for the economic analysis of environmental problems so that researchers can provide sound advice to policymakers.

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The Trade-Off Between Trade And The Environment – A Study From Vietnam

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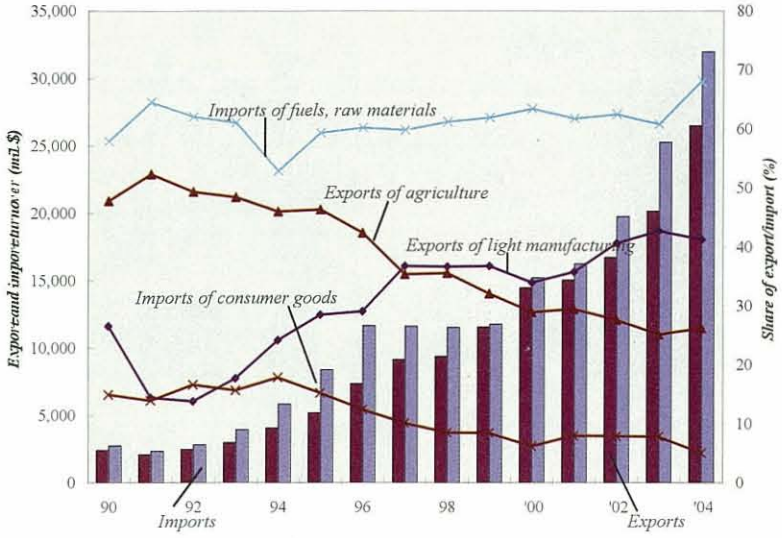
The impact of trade liberalization on the environment is a key question for all developing countries and is the subject of a new EEPSEA study in Vietnam. It finds that trade liberalization in the country exacerbates industrial pollution at both the firm and industry level. The study was carried out →

A summary of EEPSEA research report 2008-RR5 'The Impact of Trade Liberalization and Industrial Pollution: Empirical Evidence from Vietnam' by Pham Thai Hung, Bui Anh Tuan and Nguyen The Chinh, c/o National Economics University, 207 Giai Phong, Hai Ba Trung Dist., Hanoi, Vietnam; Email: hungpt@neu.edu.vn

"Trade liberalization in the country ...

by Pham Thai Hung, Bui Anh Tuan, and Nguyen The Chinh, from Vietnam's National Economics University. The researchers do not call for trade restrictions. Instead, they recommend that the environmental impact of any future trade reforms should be carefully considered and that steps should be taken to mitigate any potential negative effects such reforms might have. The researchers highlight heavily polluting industries and recommend that these should be given priority in any clean-up programmes. The study also highlights key steps which can be taken to help reduce pollution, including the strict enforcement of environmental regulations, support to promoting information technology application and technology advancement in the manufacturing sector.



Export and import: turnover and structures (1990-2004)

Source: compiled from GSO Statistical Yearbooks 1995, 2000, and 2004

Notes:

(1) Export values and shares refer to total exports including crude oil.

(2) Light manufacturing consists of garments, footwear, seafood (processed), handicrafts and other light manufacturing products.

Trade Liberalization and the Environment

Vietnam has experienced impressive economic growth in the past 15 years. The liberalization of trade and investment has been a key driver to this growth and has helped catalyze the development of manufacturing industries. It is commonly recognized that these trade reforms have helped put Vietnam among the top two or three performers in the developing world.

However, many of the export-oriented industries that have emerged in recent years are highly polluting. Moreover, Vietnam has relatively weak environmental regulations (relative to its main trading partners). These developments have therefore raised concerns over whether the expansion of trade in Vietnam (and the associated foreign investment) has exacerbated environmental degradation. Questions are also being asked as to whether any future trade-based economic development can be made more environmentally sustainable.

To help answer such questions, this study assesses the impact of trade liberalization in Vietnam, particularly on the country's environmental and natural resources. Previous studies have only produced a partial picture of the situation as they have mostly used data collected by small-scale surveys or from case studies. In order to get a full picture of the environmental impact of trade liberalization, this study looks at the situation at both the firm and industry level – this allows differences in impacts between individual firms to be captured and also allows the examination of trade-environment linkages at a countrywide level.

Getting a Full Picture

One distinctive feature of this study is that its analysis is largely based on the raw data of the 2002 Vietnam Enterprise Survey (VES). This information has, until now, been only available on a very limited basis. The 2002 VES provides a rich source of information on firm-level and sectoral characteristics of Vietnam's manufacturing sector. This information includes financial and operational details, information on export markets and details of the application of information technology. The study uses this information to look at a sample of over 14,700 manufacturing enterprises at both the firm and industry level.

exacerbates industrial pollution."

Pollution is used in the study as the key indicator of a firm's (or industry's) impact on the environment. The World Bank's Industrial Pollution Projection System (IPPS) is used to make projections of the pollution produced by the manufacturing firms in the study. The IPPS 'converts' information on employment, output and other company information into a measure of pollution per unit of activity for a particular firm.

As the trade-environment linkage is the key focus of this study, the research team goes to great lengths to gauge the extent to which each firm or industry is 'exposed' to trade – in other words, the extent to which trade liberalization affects them. Weighted-average tariffs are used as a measure for trade exposure. Vietnam's tariff data is drawn from UNCTAD's Trade Analysis and Information System (TRAINS).

Using this information about trade exposure and pollution, the study analyses the relationship between these two issues. It also looks at the characteristics of firms and industry sectors that affect this trade-environment linkage.

The Trade Effect

Based on the data on water pollution, air pollution and toxic pollution projected using the VES 2002 and the IPPS pollution coefficients, it is clear that industrial pollution is heavily concentrated in the southeast, and Red River Delta in the north. Paper products, basic chemicals, fertilizers, basic iron and steel, textiles and garments and food and beverage are found to be amongst the top polluting industrial sectors. Central-level State Owned Enterprises (SOEs) are also found to be a major contributor to industrial pollution.

At a firm level it is clear that there is a negative relationship between trade protection and industrial pollution in all cases. On average, a reduction of ten percent in the weighted average tariff produces an increase in pollution of between 0.21 to 0.33 percent. It seems that this 'trade effect' is strongest with regard to air pollution and more modest with regard to toxic pollution.

At an industry level, the trade protection-pollution effect is again found to be negative and significant. It was found that a reduction of ten percent of the tariff faced by an industry (from the average level of protection) would lead to an increase of between 2.7 to 3.5 percent in pollution produced by that industry. This indicates that industries that are subject to low tariff protection levels tend to discharge more pollution than industries that are subject to higher tariff protection levels. As with the firm-level results, the strongest trade effect at the industry level was observed when air pollution was assessed.

Labour size, capital and the age of firms were all found to influence the amount of pollution firms produced. Controlling for other factors, an increase by ten percent in labour size raises pollution by between 2.5 and 4.4 percent. This is slightly higher than the effect induced by the same increase in capital. The study also suggests, not surprisingly, that regulatory compliance is an important factor in the control of pollution. Furthermore, the study demonstrates that firms with a high level of information technology and other advanced technology are also less polluting. On average, firms that develop websites and use emails in daily business produce 9 to 15 percent less pollution than those without these applications.

Industrial pollution levels by region (2002)

Units: tonnes and percentage

	Water	Air	Toxic
Total pollution	637,556	2,471,700	148,362
Regional distribution			
– Red River Delta	20.55	27.47	24.20
– Northeast	35.13	22.66	19.48
– Northwest	0.22	2.27	0.15
– North Central Coast	3.53	15.90	3.79
– South Central Coast	6.09	5.18	6.73
– Central Highlands	0.73	1.16	1.07
– Southeast	29.96	17.07	40.31
– Mekong River Delta	3.80	8.29	4.27

Source: estimated from the 2002 VES and IPPS

Note: Water pollution includes BOD and TSS; air pollution includes SO_2, NO_2, CO, VOC, TP, and PM_{10}; toxic pollution covers all toxic pollutants discharged to air, land, and water.

Liberalizing Tariffs Increases Pollution

The finding of this study leads to the conclusion that the liberalization of tariffs exacerbates industrial pollution in Vietnam's manufacturing sector. The environmental trade-off highlighted by the study shows that Vietnam is, in fact, in a similar situation to a number of other developing countries such as Bangladesh, Chile, India, Uganda and Argentina. In all these countries trade liberalization has been reported to exacerbate environmental degradation.

On the basis of these findings, it is clear that recent trade reforms geared to liberalizing Vietnam's trade regime have exacerbated industrial pollution. This is worrying given the fact that Vietnam has recently become the 150th WTO member and further trade liberalization commitments are now in the pipeline. The question of how to respond to the study's findings is not an easy one. The researchers do not recommend that trade liberalization should be reversed. Instead they look at what should be done to mitigate the negative effects that trade liberalization has on the environment.

Meeting the Challenge

The researchers recommend that policy makers should be made aware of the negative environmental impacts of trade liberalization. They highlight Vietnam's amended Law on Environmental Protection and the fact that the country has set up a framework for the introduction of pollution fees, sanctions and incentives to reduce industrial pollution and encourage clean technologies. They note that, before these instruments can be effectively implemented, a number of strategic environment assessments need to be carried out. The researchers recommend that when undertaking these assessments the appropriate authorities should bear in mind the potential impacts of trade liberalization on the environment.

The researchers also use their findings to highlight a number of key points for policymakers involved in environmental improvement projects. For example, they note that Vietnam's resources for industrial pollution clean up are limited. Because of this, they suggest that clean-up work should be focused on the highly polluting industries that their study highlights, namely paper products, fertilizers, basic iron and steel and basic chemicals.

They suggest how industrial pollution control can be made more effective. In particular, they recommend the promotion of information technology and technology advancement in the manufacturing sector as these will bring environmental protection gains. They also recommend that more should be done to encourage firms to comply with labour and environmental regulations.

In addition, the researchers conclude that industrial pollution control measures should be directed at central-level SOEs. They suggest that the SOE reform agenda currently being implemented in Vietnam should be continued and that environmental protection should be highlighted as part of this process.

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